CARE International in Mozambique
VIDA II Project

Results from Midterm Household Survey Conducted July 2004

Transfer Authorization Award No. FFP-A-00-02-00014

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September 2004

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1. Introduction

This Report provides information from the Midterm Household Survey conducted for CARE-Mozambique's VIDA II project in July-August 2002. The purpose of the midterm survey is to measure project indicators at the mid-point of project implementation, to provide measurements project achievements relative to baseline measurements of the indicators. The overall objectives of the VIDA II project are to provide households with increased access to food by increasing household incomes and improved food utilization within households. The project supports increasing household incomes by providing training and support for households to increase agricultural production, produce higher valued crops, improve storage and marketing practices for crops, and provide training in income-generating activities that rural households and groups may undertake. Improved food utilization is supported by providing training on the importance of good diets and appropriate feeding practices for children.

The project monitoring and evaluation plan defines project indicators that monitor project impacts, results and activities. The following table lists the results and impact indicators that are to be measured using household surveys.

Table 1. Project indicators to be measured by household surveys

Level	Indicator
Results Indicators	Value of agricultural sales per HH
	Number of household producing project-supported crops
	% HH adopting improved agricultural practices
	% HH adopting improved storage techniques
	% HH adopting improved marketing practices
	% Infants 4-10 months receiving complementary foods
	% infants 4-24 months fed 5 times per day
	% infants 4-24 months fed enriched porridge
Impact Indicators	Household income (calculated from INCPROX model)
	Household assets
	Length of Hungry season
	Diet quality (diet diversity)
	Anthropometric measures of children (baseline and final)

This report presents the calculations for each of these indicators from the results of the baseline survey. The estimates of household income using the INCPROX model are not included in this report, but will be provided in a separate report. These results can be compared with the benchmark values obtained in the baseline survey in order to measure project achievements of stated targets at the mid-point of the life of the project.

2. Methodology

Sample Design

The survey sample selection was undertaken following the procedures described in the FANTA Report, *Sample Design for Common Indicators Baseline Survey of Mozambique*,

prepared by Anthony G. Turner, June 2002. This report establishes a sample size of 600 households for each PVO with a Title program in Mozambique, and describes procedures for sample selection. A total of 30 communities were selected, with 20 household interviewed in each community. Within each community, one half of the selected households (10 households) participate directly in project-supported groups, and one half are not supported directly by the project. The actual number of households that are identified as participating in groups (306) is slightly more than half the sample because this category includes households that are members of associations that are supported by other NGOs or by the government. For the midterm survey, all of participating the PVOs agreed to a sample selection methodology in which one-half of the 600 households would be selected from communities included in the baseline survey, and the other half would be selected from other communities where the project has initiated activities since the beginning of the current DAP.

The project M&E officer followed the guidelines described above to select the households for the midterm survey sample. University students were contracted by the project to conduct the survey in the field and to enter data at the project headquarters.

Table 2 provides information about the number of households surveyed in each of the provinces of Nampula where the VIDA II project operates and the agroecological zone defined by USAID that the districts fall in.

Table 2. Number of Households surveyed by District

District	Number HH surveyed	USAID Zone
Meconta	100	
Angoche	60	
Nacaroa	40	
Erati	60	
Nampula	20	
Mogovolas	60	
Monapo	80	
Moma	40	
Murrupula	40	
Lalaua	60	
Ribaue	40	
All Districts	**600**	

Identification and Analysis of Household Categories

The VIDA II project provides services to households by working directly with three different types of groups in the project communities: farmers' associations and extension groups are provided information about agricultural practices, with associations being provided additional support for marketing their crops; and women's groups are provided initially with information about importance of good nutrition and appropriate feeding practice for children and subsequently are provided agricultural messages and support for undertaking income generating activities .

The sample is divided into three categories of household, to identify whether or not the household is a direct participant in project activities, and for how long. The first category, labeled "Non" in the tables, comprises households that are not members of any project

group(association, extension group, or women's group). The second group ("New") includes households that are members in at least one project group but have been members for less than two years. The third group ("Old") includes those households that have been members in at least one project group for two years or more. Comparison of results across these three categories provides indications about i) the degree to which project activities are achieving the desired changes in household activities as well as the speed with which households adopt techniques promoted by the project, and ii) the strength of the relationship between changes in household activities (project results indicators) and household well-being (project impact indicators). Table 3 shows the interpretation of alternative combinations of levels of indicators across the three household categories. Assessments of "low" and "high" values of indicators for New and Old household categories are made on the basis of statistical tests to compare values of these categories with the values of the non-participant household category. Assessments of "Low" and "High" values for non-participating households are made on the basis of previous experience, including the project baseline survey.

Relationships between results indicators and impact indicators shed some light on the ways in which project activities are achieving the final goal of improving the welfare of households. If impact indicators are "high" for project participant groups relative to non-participants but results indicators are "low", project activities cannot be attributed as causes for the higher levels of welfare of the participating households. Alternatively, if results indicators and impact indicators are high for project participant groups and low for non-participant households, project activities may be ascribed as positively affecting household welfare. If results indicators are high for households in new and old groups, and impact indicators are low for new groups and high for old groups, the interpretation is that the effect-level changes take some time to impact household welfare.

Table 3. Levels of Indicators by Household Category, and Corresponding Interpretation

Household Categories			Interpretation
Non	**New**	**Old**	
"Low"	"Low"	"Low"	Project does not affect household activities
"Low"	"Low"	"High"	Project affects activities of directly participating households, requires substantial time for households to adopt
"Low"	"High"	"High"	Project affects activities of directly participating households, households adopt quickly
"Low"	"High"	"Low"	Participating households initially adopt household activities but later on give them up
"High"	"High"	"High"	Project affects directly participating households and there is substantial adoption by households not directly participating with the project. *(Alternately, adoption is being promoted by factors other then project interventions.)*

3. Findings

Number of Households in Project Supported Groups

Table 4 provides information about the membership of households in the three types of project groups, and two age categories of group membership. Note that membership in project groups is a stratification variable in the survey design, so the number of participating households does not represent the proportion of membership in the overall sample. This design strategy was implemented to ensure that sufficient numbers of participating and non-participating households are included in the sample to ensure statistically significant comparisons across these subgroups. The relative proportions of membership in the three types of project groups are very similar to those in the baseline survey. The relative proportion of "new" groups as compared to "old" groups is higher in the midterm than in the baseline survey. This reflects the activities over the course of the first two years of the VIDA II project to organize new project groups.

Agricultural Practices

Table 5 reports results on adoption of agricultural practices by categories of project participation. In general, a higher proportion of project participating households reported adopting practices promoted by the project than did non-participating households. In most cases the differences between participating and non-participating groups is statistically significant. Of particular interest are the large differences between participating and non-participating groups with respect to: use of botanical pesticides, conservation farming techniques (mulch/fertilizer in planting holes, opening holes before rains), all recommended planting techniques, contour planting, drainage ditches *(contornos)* , planting trees, and use of rat guards on storage structures. Also significant, the proportion of participating households that reported reducing field burning was not much higher than non-participating households. The proportion for "old" participants is lower than for "new" participants, suggesting that households tend to take up field burning again after a few years of giving it up.

Table 6 provides information about adoption of improved seed varieties promoted by the project. Project participants, both "new" and "old" have adopted improved varieties of groundnut and cowpea at a significantly higher rate than non-project members. Interestingly, the proportion of non-participant households that have adopted these project-supported varieties is also significant. Also, the proportions of non-participant households that have adopted improved varieties of improved cassava, Black Record sunflower, and white sesame are also relatively high. Adoption of improved seeds seems to be spreading to all households in the communities where the project works.

Agricultural Production and Sales

Project promotion of improved agricultural practices and inputs is designed to increase production of both food and cash crops. Table 7 provides information about the percent of households producing the major food crops and cash crops, with information from the baseline survey included for comparison. A significantly higher proportion of project participants grow Nametil groundnuts; nhemba, jugo and oloko beans ("old" participants); Fava beans; local sweet potato (but not orange-fleshed sweet potato);

paprika; piripiri and sunflower ("old" participants); white sesame; soybeans. Of particular interest are the overall high proportions of participant households that are growing Nametil groundnuts and white sesame. The proportion of households growing almost all crops is higher in the midterm than the baseline survey. One important exception is cotton. Also, the proportion of households growing local sesame has gone down, but is more than offset by the proportion of households now growing white sesame.

Table 8 reports average production and sales of major food and cash crops by categories of project participation. Project participant households have statistically significantly higher average production than non-participant households of maize ("old" participants), groundnut—particularly Nametil variety, jugo beans, cassava ("old" participants), white sesame ("old" participants), and soybean. Production levels are higher for almost all crops in the midterm than the baseline survey. The important exception is local sesame, but this reflects substitution of local with white sesame. With respect to sales, project participant households have significantly higher sales than non-participant households for maize, groundnuts (especially Nametil variety), boer beans, cassava. (The mean quantity of white sesame sales is 148 kg for "old" participants compared with only 15 for non-participants, but the significance level of this difference is 10.3%.) As is the case with production, the average quantities sold of almost all crops are higher in the midterm than the baseline survey.

Table 9 provides summary information about the value of all crops produced and the total value of agricultural sales. The representative prices used to calculate the values of production are given in Appendix 1. These representative prices are the median value of sales prices reported in the survey. "Old" participant households have significantly higher value of agricultural production and sales than do non-participant households. While the mean values of these indicators are also higher for the "new" participant households, these values are not significantly different from the non-participant households at the 10% level.

Child Feeding Practices

Table 10 provides information about child feeding practices, broken down by project participation category and by gender of household head. A significantly higher proportion of participant households feed children of 10-24 months of age at least five times a day, and a higher proportion of "old" participants provide their children with enriched foods. However, it should be noted that a high proportion of non-participant households also provide their children with enriched foods.

Household Assets

Value of household assets was computed by multiplying the number of each type of asset owned by the representative household times the representative price of that asset. The representative prices of assets are given in Appendix 2. The representative price of each type of asset is the median value of the prices reported in the survey. Overall ownership of household assets has increased substantially from the baseline to the midterm survey. (See Table 11.) For example, in the baseline only 34 percent of surveyed households had bicycles, while over half of the households in the midterm reported having one. The percentage of participant households owning many kinds of assets is significantly higher

than non-participant households. The total value of household assets is higher for participant than non-participant households, but the difference is statistically significant only for "old" participants.

Food Security and Nutritional Status

Table 12 reports two indicators of household food security: number of months that households report experiencing shortage of food, and the diet diversity index, a measure of quality of household diet. Overall, the nutritional status of households has improved from the time of the baseline to the midterm. The number of months of food shortage has decreased by over 40% (from almost 2.5 to 1.4) and the diet diversity index has increase by over 15 percent (from 4.00 to 4.16) However, there are not great differences in the nutritional status across the project participation categories. The diversity index of the "old" participant households is statistically different from that of the non-participants, but the difference is only 11%.

Perceptions about Association Membership

Tables 13 summarize responses about the perceived advantages and problems associated with association membership as well as reported reasons for not joining associations. The most commonly cited advantage of membership was receiving training in agricultural practices (44%), followed by promoting cooperative spirit (30%), access to seed and help selling products (20%). Overall, problems were not cited very frequently, with the most common reported problems lack of inputs (12%), and lack of seed (7%) not really reflecting problems of associations *per se*. The problems identified with association management included: lack of cooperation and conflicts among members (10%), management problems (3%), lack of credit (2%), and lack of assistance in marketing (2%).

With respect to reasons for households to not join associations, the most common reason given was that there is no association within the community (27%). Next in prevalence are response related to lack of information: lack of information within the community (16%), not aware of advantages of association membership (11%), not aware of how to join (4%). The remaining answers reflected genuine lack of interest or possibility to join in association.

4. Summary of Findings

- At the results level the project has shown significant progress. Participating households have widely adopted many of the agricultural practices and child feeding practices promoted by the project. Practices appear to be adopted quickly, since the proportion of adopters is high among "new" participants as well as "old" participants. The only example of a practice that appears to suffer from "regression" over time is restriction of field burning. A higher proportion of "new" participants reported restricting burning than did "old" participants.
- At impact level – increases in ag production, but more noticeable for "old" than new groups. This suggest that there is some time lag from results level changes to impact level changes

- Ownership of assets. The value of household assets is only higher for "old" participants, not "new" participants. Suggests that the households that participate in project activities do not start out with higher asset base, but over time are able to accumulate more assets
- Nutritional status – overall has improved but not significantly better for project participants than non-participants.

Table 4. Distribution of Household by Category of Project Participation

Project Participation Category	Baseline			Midterm		
	Number	% sample	% Female-headed	Number	% sample	% Female-headed
Entire Sample	600	100.0	5.2	600	100.0	17.0
Households in groups	89	14.8	6.7	306	51.0	22.2
Farm groups[a]	86	14.3	7.0	270	45.0	17.0
Associations	74	12.3	5.4	164	27.3	14.6
Extension groups	18	3.0	11.0	165	27.5	20.0
Women's groups	20	3.3	10.0	92	15.3	43.5
"New" Groups (< 2 years)	25	4.2	8.0	137	22.8	25.6
"Old" Groups (≥ 2 years)	64	10.7	6.3	169	28.2	19.3
Non-Participants	511	85.2	4.9	294	49.0	11.6

[a]Note: In Baseline survey, 6 households were members of both associations and extension groups. In Midterm survey, 59 households are members of both associations and extension groups.

Table 5. Agricultural Practices by Category of Project Participation

Agricultural Practices	% HH			
	HH Categories			Total Sample
	Non	New	Old	
Pesticides				
Commercial pesticides	13	15	**20** [b]	15
Botanical pesticides	23	**42**[b]	**60**[b]	38
Nhambrica	*2*	*13*	***20***[b]	*10*
Lali	*2*	***9***[b]	***12***[b]	*6*
Tabaco	*2*	***8***[b]	***5***[b]	*4*
Cinzas	*19*	***27***[b]	***45***[b]	*28*
Piripiri	*11*	***26***[b]	***29***[b]	*19*
Papaya	*1*	***9***[b]	***8***[b]	*5*
Outros	*2*	***0***[b]	*4*	*2*
Soil Fertility				
Commercial fertilizer	7	**12**[b]	9	9
Manure	9	8	**23**[b]	13
Liquid manure	0	1	**2**[b]	1
Compost	2	3	**5**[b]	3
Mulch (capim/restolhos)	69	**79**[b]	**82**[b]	75
Mulch/fertilizer in planting holes	39	**51**[b]	**66**[b]	49
Plant legume cover crops	17	15	**29**[b]	20
Rotation/association with legumes	83	**92**[b]	**92**[b]	88
Avg no. practices adopted	2.3	**2.6**[c]	**3.1**[c]	2.6
% adopting at least 2	75	**91**[b]	**90**[b]	83
Recommended planting				
Line planting	46	**82**[b]	**86**[b]	66
Recommended spacing	26	**65**[b]	**75**[b]	49
Opening holes before rains	11	**26**[b]	**38**[b]	22
Thinning	45	**66**[b]	**71**[b]	57
Avg no. practices adopted	1.3	**2.4**[c]	**2.7**[c]	1.9
Erosion control measures[a]				
None	30	**15**[b]	**4**[b]	19
Plant cover crop	22	26	30	25
Contour plant	10	**17**[b]	**25**[b]	20
Fallow	12	20	**26**[b]	18
Drainage ditches	31	41	**63**[b]	43
Plant trees	5	9	**24**[b]	13
Reduce field burning	4	**11**[b]	6	6
Barriers (contour)	42	52	54	48
Avg no. practices adopted	1.3	**1.8**[c]	**2.4**[c]	1.7

[a] percentage of households reporting suffering from erosion problems

[b] subgroup proportion significantly different from the proportion of non-member subgroup at 10% level (Chi-square test)

[c] subgroup mean significantly different from the mean of non-member subgroup at 10% level (t-test)

Table 5 (Continued). Agricultural Practices by Category of Project Participation

Agricultural Practices	% HH			
	HH Categories			Total Sample
	Non	New	Old	
Seed storage practices				
Botanical pesticides	15	**25**[a]	**42**[a]	25
Rat traps	21	22	**34**[a]	35
Rat guards	3	**11**[a]	**12**[a]	8
Permanently seal silo	14	12	20	15
Cat	24	20	30	25
Actellic	2	4	7[b]	4
Avg. no practices	0.8	0.9	**1.4**[a]	1.0
% HH adopting at least 1 practice	53	58	**78**[a]	61
% HH that purchased seeds	44	45	**53**[a]	47
Expenditures on seeds	23,314	22,507	**33,762**[b]	26,073

[a]subgroup proportion significantly different from the proportion of non-member subgroup at 10% level (Chi-square test)
[b] subgroup mean significantly different from the mean of non-member subgroup at 10% level (t-test)

Table 6. Improved Varieties of Crops Planted, by Category of Project Participation

Crop	Variety	% HH			
		HH Categories			Total Sample
		Non	New	Old	
Maize	*Metuba*	24.2	29.4	**50.4**[a]	33.1
	Manica	7.9	4.6	**14.9**[a]	9.2
	Sussuma	2.6	4.6	**7.1**[a]	4.4
Cassava	*Nikuaha*	21.5	25.9	27.4	24.2
RR Groundnut	*Nametil*	14.9	**27.0**[a]	**45.6**[a]	26.3
	Momane	2.4	4.7	1.8	2.5
Cowpea	**IT18, IT36, IT76**	22.6	**39.6**[a]	**47.1**[a]	33.3
Pigeon Pea	*Muakuveya*	17.0	18.1	17.0	17.2
Sw. Potato	*Orange fl.*	24.3	36.4	29.0	28.9
Sunflower	*Black Record*	50.0	69.2	**82.4**[a]	65.4
Sesame	**White**	61.1	57.1	**80.2**[a]	68.0

[a]subgroup proportion significantly different from the proportion of non-member subgroup at 10% level (Chi-square test)

Table 7. Percent of Households Growing Crops, by Category of Project Participation

Product	%HH				
	HH Categories			Total Sample	*Baseline Total*
	Non	New	Old		
Maize	77	77	83	79	*65*
Rice	25	28	31	27	*19*
Sorghum	42	51	50	46	*32*
Millet	5	**7**[a]	**9**[a]	7	*1*
Groundnut	80	85	**90**[a]	84	*66*
Large local	28	28	34	30	*n.a.*
Small local	43	39	**31**[a]	39	*n.a.*
Nametil	16	**27**[a]	**49**[a]	28	*n.a.*
Momane	2	4	4	3	*n.a.*
Beans manteiga	2	2	2	2	*3*
Beans nhemba	79	82	**72**[a]	78	*50*
Beans jugo	43	40	**57**[a]	46	*n.a.*
Beans boer	50	50	54	51	*26*
Beans oloko	26	32	**36**[a]	30	*n.a.*
Beans fava	25	**18**[a]	**35**[a]	26	*n.a.*
Irish potato	2	4	2	2	*n.a.*
Cassava	83	85	84	84	*72*
Sweet pot. Orange fl.	5	6	9	7	*2*
Sweet potato local	11	15	**20**[a]	14	*6*
Cotton	17	16	18	17	*25*
Tobacco	7	10	6	8	*7*
Paprika	1	**4**[a]	**4**[a]	3	*4*
Piripiri	3	1	**11**[a]	5	*n.a.*
Sunflower	6	9	**13**[a]	9	*4*
Sesame local	15	13	13	14	*17*
Sesame white	26	**17**[a]	**49**[a]	30	*0*
Sugar cane	12	12	14	12	*11*
Pineapple	4	4	**8**[a]	5	*3*
Soybean	1	**6**[a]	**4**[a]	3	*0*

[a]subgroup proportion significantly different from the proportion of non-member subgroup at 10% level (Chi-square test)

Table 8. Production and Sales of Crops by Category of Project Participation

Product	Household production (kg)					Household sales (kg)				
	HH Categories			Total Sample	*Baseline Total*	HH Categories			Total Sample	*Baseline Total*
	Non	New	Old			Non	New	Old		
Maize	220.0	227.0	**374.6** [a]	264.8	*163.1*	34.9	20.7	**98.7** [a]	49.6	*34.1*
Rice	52.8	37.8	42.9	46.6	*22.7*	14.4	5.0	7.7	10.4	*1.7*
Sorghum	66.8	69.3	63.8	66.6	*39.1*	0.3	1.4	**1.9** [a]	1.0	*0.8*
Millet	4.4	1.6	8.4	4.9	*0.2*	0.0	0.0	0.0	0.0	*0.0*
Groundnut	127.3	**165.6** [a]	**252.6** [a]	171.2	*132.2*	32.4	38.6	**63.1** [a]	42.5	*41.1*
Large local	32.2	40.9	53.9	40.3	*n.a.*	6.5	5.6	12.3	8.0	*n.a.*
Lmall local	64.1	64.5	47.1	59.4	*n.a.*	18.7	21.1	16.4	18.6	*n.a.*
Nametil	26.6	**56.6** [a]	**148.6** [a]	67.9	*n.a.*	6.7	10.9	**31.4** [a]	14.6	*n.a.*
Momane	3.8	3.6	1.8	3.2	*n.a.*	0.5	0.7	3.0	1.2	*n.a.*
Beans manteiga	2.0	1.6	2.0	1.9	*3.5*	1.3	0.2	0.5	0.8	*n.a.*
Beans nhemba	86.5	81.7	86.1	85.3	*38.8*	7.9	5.1	11.8	8.4	*0.8*
Beans jugo	13.4	15.0	**20.4** [a]	15.7	*n.a.*	0.9	1.8	1.7	1.3	*n.a.*
Beans boer	29.5	28.7	35.3	31.0	*19.8*	1.3	**6.2** [a]	2.9	2.9	*1.4*
Beans oloko	10.3	7.1	13.7	10.5	*n.a.*	0.4	0.0	0.7	0.4	*n.a.*
Beans fava	14.7	10.9	21.5	15.8	*n.a.*	0.2	0.0	1.0	0.4	*n.a.*
Irish potato	7.6	10.8	0.5	6.3	*n.a.*	0.0	5.4	0.1	1.2	*n.a.*
Cassava	290.3	358.8	**431.4** [a]	345.6	*224.3*	29.6	**65.7** [a]	68.6	48.8	*47.3*
Sweet pot. Orange fl.	4.3	**1.5** [a]	8.9	5.0	*1.6*	0.8	0.0	0.0	0.4	*0.3*
Sweet potato local	16.3	9.4	39.6	21.3	*1.6*	9.5	0.0	24.0	11.4	*0.0*
Cotton	81.6	154.8	130.9	112.2	*119.3*	76.2	132.1	113.0	99.4	*62.5*
Tobacco	21.9	35.0	26.1	26.1	*7.7*	21.0	35.0	26.1	25.6	*6.8*
Paprika	0.1	0.5	0.9	0.4	*3.0*	0.0	0.0	**1.1** [a]	0.3	*1.6*
Piripiri	0.2	0.1	1.9	0.7	*n.a.*	0.5	0.0	1.3	0.4	*n.a.*
Sunflower	2.6	5.4	**7.8** [a]	4.7	*2.8*	1.2	0.0	4.5	1.8	*0.3*
Sesame local	9.9	**4.4** [a]	8.5	8.3	*25.9*	5.8	**1.2** [a]	5.2	4.6	*23.0*
Sesame white	17.5	17.3	**50.8** [a]	26.8	*0.0*	15.0	13.6	**34.0** [a]	52.0	*0.0*
Sugar cane	34.2	92.7	138.8	77.1	*.06*	12.6	23.5	126.7	47.1	*3.0*
Pineapple	1.4	3.0	19.9	7.0	*.01*	1.1	0.8	4.5	2.0	*0.02*
Soybean	0.0	**0.9** [a]	**1.4** [a]	0.6	*0.0*	0.0	**0.6** [a]	**1.2** [a]	0.5	*0.0*

[a] subgroup mean significantly different from the mean of non-member subgroup at 10% level (t-test)

Table 9. Value of Agricultural Production and Sales, by Category of Project Participation

Indicator	HH Categories			Total Sample	*Baseline Total*
	Non	New	Old		
Value of agricultural production (MT)	3,834,767	4,765,005	**6,061,758**[a]	4,668,478	*3,550,008*
Value of agricultural sales (MT)	1,585,199	2,182,509	**3,765,080** [a]	2,336,207	*1,573,369*
Sales % of production	27.7	27.8	49.3	33.8	*47.3*
Number of crops sold	1.6	1.7	**2.3** [a]	1.8	*1.3*

[a] subgroup mean significantly different from the mean of non-member subgroup at 10% level (t-test)

Table 9. Child Feeding Practices by Category of Project Participation, Gender of Household Head

HH Category	% HH				
	% under 4 mo. exclusively breastfed	% 4-10 mo. eating enriched foods	% 10-24 mo. eating 5 times per day	% 10-24 mo. eating enriched foods	% 0-24 mo. fed more during diarrhea
Non	28.9	75.0	0.0	71.1	76.5
New	30.6	83.3	**18.2**[a]	77.3	94.1
Old	20.3	**100.0**[a]	**54.1**[a]	**91.9**[a]	86.2
Male-Headed	27.5	81.0	12.7	77.2	82.5
Female-Headed	22.2	100.0	**56.0**[a]	88.0	88.2
Total	26.0	86.2	23.1	79.8	83.8

[a]subgroup proportion significantly different from the proportion of non-member subgroup at 10% level (Chi-square test)

Table 11. Household Assets, by Category of Project Participation

Type of asset	*% HH Owning*				
	HH Categories			Total Sample	*Baseline Total*
	Non	New	Old		
Wooden bed	27.8	30.7	**43.2**[a]	32.8	*19*
Wooden table	18.0	16.8	20.7	18.5	*10*
Bicycle	45.2	**54.7**[a]	**59.8**[a]	51.5	*34*
Motorcycle	0.0	0.7	0.6	0.3	*1*
Sewing machine	3.4	5.8	**7.1**[a]	5.0	*4*
Radio	59.9	59.9	**72.8**[a]	63.5	*55*
Cotton mattress	9.2	**14.6**[a]	**20.1**[a]	13.5	*7*
Foam mattress	3.4	**8.0**[a]	4.7	4.8	*2*
Wooden chest	27.2	27.0	**39.1**[a]	30.5	*17*
Clock	31.0	29.9	34.3	31.7	*14*
Car	0.7	1.5	1.8	1.2	*0*
Lamp	77.9	79.6	**85.8**[a]	80.5	*58*
Tin roof on house	1.7	4.4	1.8	2.3	*2*
Cement/brick walls of house	5.4	8.0	**13.0**[a]	8.2	*3*
Value of all assets (MT)	1,224,830	2,049,635	**2,123,047**[b]	1,666,158	*n.a.*

[a]subgroup proportion significantly different from the proportion of non-member subgroup at 10% level (Chi-square test)

[b]subgroup mean significantly different from the mean of non-member subgroup at 10% level (t-test)

Table 12.Household Food Security indicators, by Category of Project Participation and Gender of Household Head.

HH Category	No. months of food shortage	Diet diversity score
Non	1.41	4.56
New	1.40	4.47
Old	1.33	**5.08**[a]
Male-Headed	1.35	4.63
Female-Headed	1.58	**5.02**[a]
Total	1.39	4.69
Baseline	*2.49*	*4.00*

[a]subgroup mean significantly different from the mean of non-member subgroup at 10% level (t-test)

Table 13. Perceived Advantages of Association Membership

Advantages	% Association HH Reporting[a]
Promotes cooperative spirit	29.5
Training in agricultural practices	44.0
Access to seed	20.1
Access to markets	4.3
Access to agricultural inputs	7.7
Nutrition education	7.7
Training in seed conservation	1.7
Better production/income	6.0
Help in selling products	20.5
"M"	1.3

[a]234 HH reported membership in associations

Table 14. Perceived Problems of Association Membership

Problem	% Association HH Reporting[a]
Lack of inputs	12.0
Lack of seed	7.3
Conflicts among members	6.8
Low agricultural production	0.9
Lack of cooperation among members	3.0
Lack of markets	2.6
Lack of credit	2.1
Management problems	2.6
Transport problems	0.4
Lack of buyer	0.9
Lack of assistance in marketing	1.7
Delays in marketing	4.3
Financial problems	2.1
"L"	

[a]234 HH reported membership in associations

Table 15. Reported Reasons for not Joining Association

Reasons for not joining Association	% HH Reporting[a]
Not aware of advantages	10.7
Not aware of how to join	4.1
No contacts with association members	3.3
No fixed place of residence	0.8
Do not agree with ideas of association	1.6
Lack of information within the community	16.1
No association in the community	27.0
Need to pay	1.6
Illness	4.9
Lack of management	0.8
New in community	2.5
Prefer to farm individually	3.8
Has other activities	8.5
Not motivated	6.3
Does not produce crops association wants	0.5

[a]366 HH not members of associations

Appendix 1. Representative Prices of Crops

Crop	MT/kg
Milho	2,000
Arroz	3,000
Mapira	2,000
Mexoeira	2,000
Amendoim grande local	7,000
Amendoim pequeno local	8,000
Amendoim nametil	8,000
Amendiom momane	7,000
F manteiga	3,500
F nhemba	3,000
F jugo	3,000
F boer	2,500
F oloko	3,000
F fava	2,000
Batata reno	3,000
Mandioca	1,000
Batata doce alaranjada	2,000
Batata doce branca	2,000
Algodao	4,000
Tabaco	28,000
Paprika	18,000
Piripiri	4,200
Girassol	4,000
Gergelim local	10,000
Geregelim branco	10,000
Cana doce	1,800
Ananas	4,000
Soja	3,600

Appendix 2. Representative Prices of Household Assets

Type of asset	Price (MT)
Wooden bed	250,000
Wooden table	150,000
Bicycle	1,200,000
Motorcycle	19,250,000
Sewing Machine	1,500,000
Radio	280,000
Cotton mattress	150,000
Foam mattress	1,200,000
Wooden chest	150,000
Clock	25,000
Car	30,000,000
Lamp	5,000

Appendix 3 Extra Data Analyzed

Groups	% HH growing sesame	% HH using recommended natural pesticides or actellic	% HH planting varieties recommended by CARE[a]	% HH planting varieties recommended by CARE[a]	% HH line planting and using rec. spacing	% HH contour planting+(contour barrier or drainage ditch)+mulching	% HH burning fields
Non	39.8	31.6	32.7	25.2	23.8	1.7	40.5
New	29.4	47.5	43.8	37.2	62.0	5.8	21.9
Old	58.5	66.3	66.3	53.9	72.8	7.7	21.9
Total	42.8	56.0	44.7	36.0	46.3	4.3	31.0

[a]including 3 varieties of maize (manica metuba susuma)
[b]excluding 3 varieties of maize

	Children 4-10 months		Children 10-24 months	
Groups	Enriched weaning foods[a]	Enriched weaning foods[b]	Enriched weaning foods[a]	Enriched weaning foods[b]
Non	16.7	75.0	44.4	68.9
New	50.0	83.3	63.6	68.2
Old	90.9	100.0	86.5	86.5
Total	51.7	86.2	63.5	75.0

[a]one or more of: sunflower oil, sesame oil or paste, groundnuts, beans, coconut, fish, meat
[b]one or more of: leafy vegetables, fruit, sugar, salt

Average production for those farmers that grow the following crops (Kg)

Group	Local sesame	White sesame	Sunflower	Paprika	Groundnut nametil	Groundnut momane	Pigeon pea	Orange flesh sweet pot.
Non	67.7	77.8	54.5	21.0	190.2	187.8	79.7	84.1
New	37.7	107.6	74.1	15.5	221.7	82.7	70.1	50.0
Old	65.7	110.1	66.3	26.0	317.8	76.3	87.8	100.3
Total	61.2	96.9	64.4	21.7	262.4	120.5	79.8	87.2

	% HH that ate food rich in vitamin A in day before interview	% hh mother nurses child more after diarrhea	% HH child receives more liquid after diarrhea	% HH child receives more food after diarrhea	% HH child receives at more nursing, liquid, or food after diarrhea
Non	20.4	17.6	14.7	14.7	38.2
New	24.8	47.1	47.1	29.4	70.6
Old	29.0	31.0	65.5	17.2	72.4
Total	23.8	28.8	40.0	18.8	57.5